The Training School Bulletin

AUGUST, 1960 Volume 57—Number 2

Peabody Picture Test
Dunn - Brooks

Reading Achievement
Jones - Gross - Van Why

Assumptions on the Sub-Normal
Blatt

Problems in Evaluation
Holowinsky

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"for the practicing professions concerned with mental retardation"

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the training school BULLETIN
is published quarterly by the Training School at Vineland, New Jersey, a private, non-profit School for retarded children, organized in 1888 as a pioneer in the study, education and care of those whose minds have not developed normally.

Subscription price is $2.00 a year. Address all inquiries to "Public Relations Department, The Training School at Vineland, Vineland, N. J." Entered March 14, 1904 at the Post Office, Vineland, N. J., as second-class matter under Act of Congress of July 16, 1894.

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Editorial:

Practice and Investigation

One of the most bothersome problems which faces the worker and the investigator in behavioral fields is the complexity of elements existing in any particular situation or person on whom diagnosis or study is to be made. Not only are there many facets to the observable entity, but so much of the personality or the complex seems due to the interrelations among them.

This tends to produce the wide schism which all too often exists between the investigator and the practising professional. In order to achieve competent research design, elements must be selected from the total to avoid impossible confusion. Following this, every action or dynamic facility must be translatable into a number. Once this is done and agreed upon, hypotheses can be erected and the pattern of the study with all its hierarchy of intricate mathematics may be worked out.

But the results of any study are only as good as the original selections and limitations permit them to be.

If these have emasculated the true situation, no amount of correlations and coefficients will produce results which the practising professional worker needs so greatly. Unfortunately, this is too often the case and the practicing worker looks upon the researcher with jaundiced eye.

Neither is really to blame. Were the investigator to relax his scrupulous design, his results would be invalid. He may in time find a method of including more variables in his computations. Meanwhile he should recognize the lack of effectiveness in practical areas and strive to overcome it, rather than to draw further and further from it toward "basic" research.

In the interim, only experienced and competent observation can be the major tool of the practitioner. The mind yet is the only univac that can absorb and integrate and that can infuse enough emotion or sixth sense to create that which welds the final decision into a workable solution—for which many of us might well give sincere thanks.

W. J.

Peabody Picture Vocabulary Test Performance Of Educable Mentally Retarded Children[1]

lloyd m. dunn and sayde t. brooks

This study was conducted to provide data on the utility of the Peabody Picture Vocabulary Test (PPVT) as a psychometric instrument for measuring the verbal intelligence of educable mentally retarded children and youth. The PPVT is an untimed test of auditory comprehension for the spoken word which is individually administered. It consists of 150 plates each containing four pictures. The one set of plates provides the basic test materials for both Forms A and B of the scale.

Thus each form consists of 150 stimulus words. On a given plate for form A, one picture is the correct response and the other three are decoys, while for form B another picture becomes the correct response and the remaining three are decoys. The plates are arranged in ascending order of difficulty, empirically-determined from data gathered in standardizing the instrument. To administer the PPVT, the examiner provides a stimulus word orally, such as "Show me *arrow*". The subject then points to, or otherwise indicates, the picture on the plate which best illustrates the meaning of the word. Each subject is tested from a basal of eight consecutive correct responses to a ceiling of six errors in eight consecutive responses. The raw score for the subject is his basal score plus the number of correct responses up to his ceiling. A more complete description of the instrument and its standardization is available in the manual of directions (Dunn, 1959).

While the scale was standardized on 4,012 subjects ranging across the full range of intellect from 2-6 through 18-0, it was designed to be especially effective in studying the mentally retarded. Since the line drawings are fairly large and relatively free of figure ground perception problems, it is made more applicable to brain injured children. Since a pointing response is required rather than an oral one, it is especially appropriate for subjects who have speech difficulties or who are extremely withdrawn.

Lloyd M. Dunn, Ph.D., is coordinator and Mrs. Sadye T. Brooks is a Doctoral Fellow in the Department of Education for Exceptional Children at the George Peabody College for Teachers, Nashville, Tenn.

1. *The research reported herein was performed in connection with Contract SAE 6425, United States Office of Education, Department of Health, Education, and Welfare. Appreciation is extended to teachers and pupils of the special classes for the educable mentally retarded in the Nashville and Davidson County School Systems.*

Since no reading is required, it has advantages in testing children who are inferior or non-readers. Since the test is untimed, it is especially suited for slow subjects and those who have multiple handicaps.

Before one can assume the PPVT is an adequate psychometric measure for the mentally retarded, evidence as to its reliability and validity with such subjects must be demonstrated. To obtain this information the following analyses were performed:

A. Reliability Data

1. A comparison was made of scores obtained by retarded subjects on Forms A and B of the PPVT. (Means and standard deviations of MA and IQ scores were calculated and compared. In addition the correlation between Forms A and B MA's and IQ's were derived to measure reliability.)

2. The relationship was studied between the observed order of difficulty of the test items for the retarded subjects and the order of presentation (which constituted the order of difficulty for the individuals on whom the test was standardized). A comparison was also made of differences in item difficulty between Forms A and B.

B. Validity Data

1. MA's were compared on the PPVT and 1937 Revised Stanford-Binet Tests of Intelligence, Form L (RS-B), when available, as evidence for the validity of the PPVT.

2. IQ's on the PPVT were compared with IQ's on the RS-B and on the Wechsler Intelligence Scale for Children (WISC) when available.

3. The relationship was studied between MA scores on the PPVT and chronological ages (CA) of the retarded subjects.

Procedure

Three hundred seventy-one white, educable mentally retarded pupils attending the city and county special day classes in the environs of Nashville, Tennessee, constituted the sample for this study. Of this number 241 were males and 130 females. From the subjects' cumulative folders, RS-B, Form L, intelligence quotient test scores were obtained on 315 subjects and WISC intelligence quotients were obtained on the remaining 56 subjects.

Table 1

BACKGROUND DATA ON THE SUBJECTS

Measure	CA	WISC		Stanford-Binet		
		N	IQ	N	IQ	MA
Mean	12-9	56	66.1	315	67.4	8-5
Standard deviation	2-7	56	8.2	315	8.2	2-0

These test results were used in the present study. Table 1 shows the mean and standard deviation of CA's, MA's, and IQ's for the group. The subjects ranged in chronological age from 6-5 to 18-0 years with a mean of 12-9 and standard deviation of 2-7 years for the total group. The RS-B IQ's ranged from 43-89 with a mean 67 and a standard deviation of 7.86. The WISC IQ's ranged from 50-86 with a mean of 66 and a standard deviation of 8.21. Mental ages were computed as of the day of administration of the first form of the PPVT. These MA's ranged from 3-10 to 13-8 years with a mean of 8-5 and a standard deviation of 2-0.

Both Forms A and B of the PPVT were administered individually to all 371 subjects. These forms were given by the writers one week apart in counterbalanced order to offset the accumulation of bias due to practice.

Results and Discussion

Table 2 shows the means and standard deviations for PPVT MA and IQ scores for both Forms A and B of the scale.

It will be seen that Forms A and B are essentially equivalent. Differences in scores were minute, the mean IQ's being less than one point apart and the MA's only one month different. The standard deviations are also parallel with slightly less variability on Form B scores.

Intercorrelations among test score results are summarized in Table 3.

A. Reliability Data

1. The product-moment correlation between MA scores for Forms A and B was 0.83, indicating good reliability for educable mentally retarded pupils of school age. With this high degree of reliability, it was assumed that the relationship between Form A scores and other variables would be essentially the same as those between Form B scores and the same variables. Therefore, only comparisons with Form A scores have been computed.

The reliability coefficient of 0.83 compares favorably with data reported by Norris, Hottel, and Brooks (1959) who found differences between

Table 2

SUMMARY TABLE OF PEABODY PICTURE VOCABULARY TEST SCORES FOR FORMS A AND B

Measure	Intelligence Quotients*		Mental Ages*	
	A	B	A	B
Mean	72-8	72.3	8-1	8-0
Standard deviation	10.2	9.7	2-3	2-0

*MA's were calculated for all 371 S's; IQ's were found for only 329 S's since in 42 cases raw scores were too low to derive an IQ equivalent.

alternate form raw scores for 60 fifth grade pupils of average intelligence to be ". . . so small as to leave little doubt as to the equivalence of the two forms . . ." Dunn and Hottel (1959) obtained an alternate-form reliability of 0.84 for 220 trainable mentally retarded children. Dunn and Harley (1959) found an alternate-form reliability coefficient of 0.97 for 20 cerebral palsied children ranging from 7 to 16 years.

2. In standardizing the PPVT, the 150 plates (and thereby the items) were arranged in ascending order of difficulty, empirically determined from test results obtained on a large sample of subjects of all levels of intelligence. This same order of difficulty appears to hold for the educable mentally retarded. Using the rank order correlation technique, a comparison was made between the order of difficulty of items found for the educable group and the order of administration (the order of difficulty for persons across the entire range of intelligence) yielding a correlation of 0.99 for both Forms A and B. The correlation of order of item difficulty for the retarded between Form A and B was 0.98. These extremely high positive correlations indicate the items on both Forms A and B of the PPVT are in order of difficulty not only for intellectually normal subjects but also for educable mentally retarded individuals of school age. This again adds support to the contention that the PPVT is a reliable instrument for use with the educable mentally retarded group.

Table 3

CORRELATIONS OF TEST RESULTS

A. Reliability Data

Comparison	n	r*
MA (PPVT "A") vs MA (PPVT "B")	371	0.83
IQ (PPVT "A") vs IQ (PPVT "B")	329	0.61
Order or difficulty vs Order of administration (Form A)	130	0.99
Order or difficulty vs Order of administration (Form B)	130	0.99
Order of difficulty (Form A) vs Order of difficulty (Form B)	130	0.98

B. Validity Data

MA (PPVT "A") vs MA (RS-B)	315	0.76
MA (PPVT "A") vs CA	371	0.68
IQ (PPVT "A") vs IQ (RS-B)	273	0.36
IQ (PPVT "A") vs IQ (WISC)	56	0.61

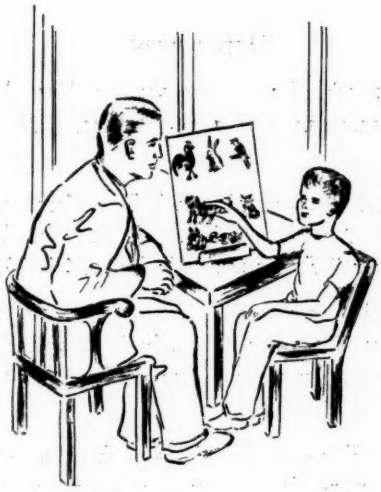
*All correlations significant at the 0.01 level of confidence.

B. Validity Data

1. The difference between PPVT and RS-B mean age equivalents for the total group was four months for Form A and five months for Form B, the RS-B MA's being higher. Standard deviations of age equivalent scores were three months higher on Form A of the PPVT as compared with the

RS-B, and identical when the RS-B was compared with Form B. It will be interesting to find the comparability of 1960 Stanford-Binet and PPVT scores.

2. Intelligence quotients on the PPVT were, on the average, slightly above intelligence quotients on the RS-B, the mean difference being 5.4 points for Form A and 4.91 for Form B. A trend in the same direction was found between means on the PPVT IQ's and WISC IQ's. As compared with the RS-B, the fact that the PPVT MA's were lower while PPVT IQ's were higher is possible since PPVT IQ's were *deviation* scores while RS-B IQ's were *ratio* scores. The lower WISC IQ's probably resulted from the WISC scores being based on 56 cases while the PPVT scores were on all 371 cases.



3. Validity coefficients ranged from 0.76 between MA's on the PPVT and the RS-B, to 0.36 between IQ's on the PPVT and the RS-B. The lower IQ intercorrelations were as anticipated since IQ variability is not as great as MA variability when subjects' ages range from 6-5 to 18-0 years. The 0.68 correlation between PPVT MA's and CA's is indirect but not conclusive evidence for the validity of the PPVT. Physical strength, ossification, height, and weight also increase with age, but are not highly related to verbal intelligence.

Summary and Conclusions

Forms A and B of the Peabody Picture Vocabulary Test were administered one week apart in counterbalanced order to 371 white, educable mentally retarded pupils in the city and county public day schools of Nashville, Tennessee. Revised Stanford-Binet, Form L, and WISC scores were

also available, these instruments having been administered when the pupils were placed in special classes.

An analysis of test scores showed a close correspondence between alternate forms of the PPVT. It was also found that PPVT scores compared fairly closely with the RS-B scores, PPVT MA's being, on the average, 4.5 months lower than RS-B MA's and the PPVT IQ's being, on the average, 2.1 points above RS-B IQ's.

Until evidence is accumulated to the contrary, it would appear that the PPVT may be used effectively to measure the verbal intelligence of educable mentally retarded pupils of school age. The alternate-form reliability coefficient was found to be 0.83. A validity coefficient of 0.76 was obtained between MA's on the RS-B and the PPVT.

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A Longitudinal Study Of Reading Achievement In A Group Of Adolescent Institutionalized Mentally Retarded Children

reginald lanier jones, frank peter gross
and earl l. van why

Problem

In evaluating the reading progress of a group of institutionalized mentally retarded children at the Columbus State School, it was noted that a decrease in rate of growth in reading achievement *seemed* to take place during the adolescent years. At the ages up through 16 (see *Figure 1*) these children had been making small but steady gains in reading. At ages 17 through 19, however, the rate of this acceleration decreased and the resulting chart suggested that a drop in the rate of achievement during these years was occurring. The differences were small but were deemed important enough to warrant investigation. A review of the literature indicated no findings of this nature with either a retarded or a non-retarded population. This study was designed to investigate more systematically the observations noted above.

The original data suggesting a decrease in the amount of progress had been obtained by averaging the rate of "growth" (as measured by the California Achievement Test) in reading achievement at the various age levels. In computing these "growth changes," it was noted that some individuals had five or more test scores included in the sample, while others had only one; therefore, no control was made for students who quit or who were rejected from school at different stages in the academic program, and, furthermore, there was no control for students who had been placed in foster homes and work situations after one or two years of academic training. It seemed that an experimental design utilizing one individual's scores, over a period of several consecutive years, would enable the control of the above variables which might have accounted for the drop in growth in reading achievement.

Procedures

All individuals who had attended the school and who had four or more consecutive (annual) achievement scores in reading on the California Test of Achievement were included in the sample. The division of these

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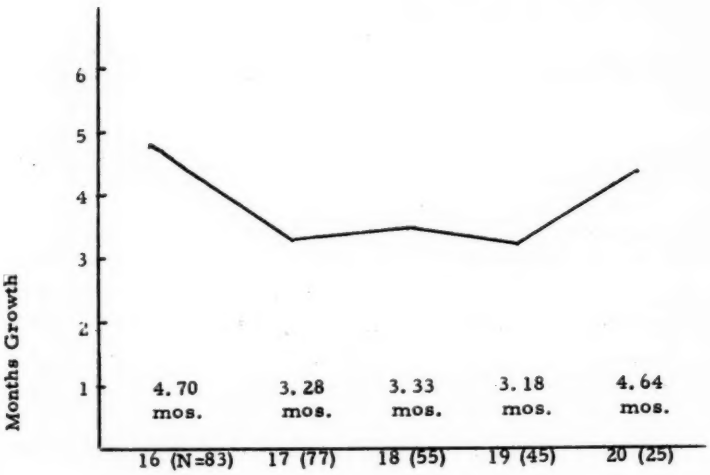
Figure 1

Average Gain In Reading By Year Level As Indicated By Original Data



cases into twelve age and sex categories left the total number of cases in each grouping too small for adequate statistical treatment. A smaller sample of forty-two cases, having consecutive reading achievement scores (covering three of the crucial ages where the drop had been noted), was therefore drawn for further analysis. This sample, consisting of 26 females and 16 males who had chronological ages of 16, 17, and 18 and who ranged in Stanford-Binet (Form L) I.Q.,s from 47 to 81, was thought to be more adequately longitudinal in nature than the previously mentioned sample.[1] In working with this group, the following null hypothesis was investigated:

> There are no significant differences in reading achievement at ages 16, 17 and 18.

A simple analysis of variance for groups of unequal size (McNemar, 1949) supplemented by Bartlett's V Test for homogeneity of variance (Walker and Lev, 1958) was used to test this hypothesis.

In computing the means and standard deviations for the three groups, (see *Table 1*), it was noted that the females seemed to achieve at a higher reading level than the males. To test this observation, the following null hypotheses were tendered:

1. There are no significant differences in reading achievement between males and females at age 16.

1. *The mean I.Q.'s of male and female samples were not significantly different (P=.32).*

2. There are no significant differences in reading achievement between males and females at age 17.
3. There are no significant differences in reading achievement between males and females at age 18.

It was indicated earlier that all subjects who had been in attendance at the school, and who had had four or more consecutive achievement scores in reading, were selected for consideration in the sample. These subjects ranged in age from 14 through 19, and in I.Q. from 47 through 81. It seemed desirable to obtain some pattern of reading growth throughout the aforementioned age range, although it was realized that this sample would not be as well controlled as the preceding one. Although there was some overlapping in the sample, i. e.: a varying number of scores for each subject, application of Bartlett's V Test indicated homogeneity of variance. In addition, there were no statistically significant differences in the mean I.Q.'s of sub-samples. The following null hypotheses were investigated:

1. There are no significant differences in reading achievement in females who range in age from 14 through 19.
2. There are no significant differences in reading achievement in males who range in age from 14 through 17.
3. There are no significant differences in reading achievement in males and females who range in age from 14 through 19.

Results

Table 1 shows the means, standard devitations, and results of analysis of variance for the 16, 17 and 18 year old groups of males and females used to test the hypothesis that there are no significant differences in reading achievement in this age range. Utilizing the .05 level as a critical value, it is noted that there are no significant differences in achievement ($P>.05$) between boys at the three age levels, between girls at these same ages, and in reading achievement for the combined group of males and females of 16, 17 and 18 ($P>.05$).

Results of the comparisons of reading achievement between males and females at the three age ranges are shown in *Table 2*. These results reject the null hypothesis tendered. A difference in reading achievement between the sexes of each age group was significant for all chronological age levels ($P<.05$ for the 16 year group and $<.01$ for the 17 and 18 year old groups).

Table 1

Characteristics of 16 through 18 Year Sample

Sex	Age	No. of Cases	Mean Reading Achievement	Standard Deviation	Between Group Variance	Within Group Variance	F Ratio	P Value
Female	16	26	3.64	1.23	2.42	1.34		
	17	26	4.12	1.06	(2 d. f.)	(75 d. f.)	1.81	>.05
	18	26	4.21	1.03				
Male	16	16	2.80	.74	.45	.82		
	17	16	3.04	.86	(2 d. f.)	(45 d. f.)	.55	>.05
	18	16	3.20	.99				
Both	16	42	3.32	1.14	2.94	1.34		
	17	42	3.70	1.17	(2 d. f.)	(123 d. f.)	2.19	>.05
	18	42	3.83	1.12				

Table 2

Sex Differences in Reading Achievement

Age	Sex	No. of Cases	Mean Reading Achievement	Standard Deviation	"t" Ratio	P Value
16	Male	16	2.80	.74	2.34	<.05
	Female	26	3.64	1.23		
17	Male	16	3.04	.86	3.15	<.01
	Female	26	4.11	1.06		
18	Male	16	3.20	.99	3.07	<.01
	Female	26	4.21	1.03		

Table 3

Characteristics of 14 through 19 Year Group

Sex	Age	No. of Cases	Mean	Standard Deviation	Between Group Variance	Within Group Variance	F Ratio	P Value
Female	14	12	3.20	.85	6.91	81.57	.08	>.05
	15	15	3.53	1.05	(5 d. f.)	(86 d. f.)		
	16	18	3.71	1.05				
	17	23	3.85	.84				
	18	14	3.79	.93				
	19	10	4.09	.90				
Male	14	14	2.26	.64	5.44	42.53	.13	>.05
	15	18	2.54	.70	(3 d. f.)*	(69 d. f.)		
	16	20	2.82	.77				
	17	20	3.02	.89				
	18	6	3.65	.99				
	19	2	3.20	.85				
Both	14	26	2.70	.88	24.18	163.71	.15	>.05
	15	33	2.99	1.01	(5 d. f.)	(167 d. f.)		
	16	38	3.24	1.01				
	17	43	3.54	.99				
	18	20	3.75	.95				
	19	12	3.94	.92				

*Analysis of variance for males was computed for the age ranges of 14 through 17 only, due to the small number of cases in the 18 and 19 year old groups.

Data in *Table 3* support the hypothesis that there are no significant differences in reading achievement from ages 14 through 19 when the groups are combined or when they are considered only by sex (all P values>.05). However, it should be observed that there is a small reading gain from each year to the next at all levels.

Discussion of Results

While no statistically significant differences in achievement in reading were noted at ages 16, 17 and 18, it is to be noted that a small but steady rate of reading growth is taking place. As indicated in *Table 1*, the average achievement rate in reading is 3.64 for the 16 year old group, 4.12 for the 17 year old group, and 4.21 for the 18 year old group. Differences in reading achievement between the year levels for the total sample are .48 years (16-17), .09 years (17-18), and .57 years (16-18). It, thus, appears that over the three year period approximately one-half year (.57) of reading growth has taken place. When one considers the range from age 14 through 19, however, it is noted that greater growth in reading achievement seems to occur, although statistical analysis shows that this change is not significant. For the overall group from 14 through 19, a mean reading achievement rate of 2.70 is noted at the 14 year level and 3.94 at the 19 year level. This indicates that 1.24 years of reading growth has taken place in this five year span.[2]

While little progress in reading may be taking place for the group as a whole, it is speculated that a large amount of "horizontal growth" is concurrently obtained by the students. The horizontal or broader experiences which relate more to making satisfactory environmental adjustments is felt by the administration to justify retaining the retarded student in the school reading program although there appears to be little growth in reading achievement. It must be remembered that the criteria for retaining a pupil in school is not only reading, but other factors as well.

The findings show a statistically significant difference between the achievement of males and females at ages 16, 17 and 18. This supports results noted by studies of both retarded and non-retarded subjects (Bensberg, 1953, Anastasi, 1958) and hence bears little discussion.

Summary and Conclusions

The present study had its inception in the observation that a decrease in the rate of reading gain *seemed* to occur in a group of mentally retarded institutionalized students in their adolescent years. The initial

2. *In interpreting all of the above findings, it must be remembered that the "more adequate children" are often placed in work assignments after one or two years in school. This sample is, however, very representative of those students who spend three or more consecutive years in the institution's school.*

hypothesis in null form stated that there were no significant differences in the reading achievement between institutionalized mentally retarded children 16, 17 and 18 years of age. Additional hypotheses resulted from observations of the raw data:

1. No significant differences in reading achievement between males and females at 16, again at 17 and at 18 will be found.
2. There are no significant differences in reading achievement for males ranging in age from 14 through 17.
3. In reading achievement there are no significant differences for females from 14 through 19 years of age.
4. There are no significant differences in reading achievement for both males and females 14 through 19 years of age.

Hypotheses relating to significant sex differences in reading ability within the 16, 17 and 18 year old group were rejected at the .05, .01, and .01 levels, respectively. All other hypotheses were supported ($P>.05$).

Interpretation of the above P values indicates that, as others have found, retarded females achieved a consistently higher reading score at each age level than their male counterparts. Reading growth for both sexes increased rather consistently at each year studied; however, this amount of growth was not statistically significant.

It was noted that although overall "reading growth" is small from year to year, the school administration feels that the institutional reading program is justified insofar as it provides additional experiential background necessary to vital environmental adjustment.

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Some Persistently Recurring Assumptions Concerning The Mentally Subnormal[1]

burton blatt

"believe those who are seeking the truth; doubt those who find it"
Andre' Gide

In 1948, Goldstein published a penetrating paper dealing with causes, characteristics, and implications of mental deficiency.[2] This work received a great deal of attention, partly, it is supposed, because of its clear and readable style (a rare and commendable achievement today) and, more importantly, because it purported to separate fact from fiction, ". . . cite the fact, nail the lie; construe the implication; act."[3]

Goldstein's paper originally deserved its place of prominence as a recapitulation of existent practices and assumptions from which were derived a series of definitive statements concerning mental subnormality. However, evidence brought forth during the decade since the publication of his work and the disconcerting questions raised by research completed and suggestive of research yet to be done, limits the usefulness of his article to its gross impact in up-grading the understanding of the unsophisticated and the uncritical. Today, the student examines "Implications of Mental Deficiency" and is not sure what is fact and what is fiction, what is myth and what is reality.

Because of the continuing tendency of many special educators and researchers to base decisions and actions on unwarranted assumptions, and considering the diligent research of those who have provided a few answers during the past years, it is desirable at this point to re-examine some of Goldstein's facts, determine their right to this label, and offer other possibilities for consideration. Unfortunately, much of Goldstein's position of ten years ago is, today, accorded almost universally unqualified accept-

Burton Blatt, Ed.D., is a professor with and chairman of the Special Education Department of Southern Connecticut State College (Formerly The New Haven State Teachers College). This paper was presented at the Workshop in the Rehabilitation of the Cerebrally Palsied and Other Disabled Persons, Springfield College, Springfield, Mass., on July 8, 1959, and at the Regional meeting of the Council for Exceptional Children held at Providence, R. I., on Nov. 17, 1959. The author expresses his gratitude to George Brabner, Jr., and Seymour B. Sarason for their suggestions and general support.

1. *Because of the absence of a consistent and universal nomenclature, it should be pointed out that, for the purpose of this paper, the term "mentally subnormal" is used as an all-inclusive classification embracing all individuals functioning below normal intellectually.*

2. *Goldstein, I., "Implications of Mental Deficiency," Occupational Education. 5:149-172, 1948 (Mental Deficiency is used here generically).*

3. *Ibid. p. 149.*

ance by teachers, authors, other professionals, and institutions of higher learning. Therefore, the purposes of this paper seem clear: to reduce the rigidity of a profession that resists change; to provoke the creative to seek answers; and to instill a healthy unrest in all who work with the mentally subnormal.

I. FACT OR FICTION?:

"Mental deficiency is basically a physical or constitutional defect. Abnormal, incomplete, or arrested growth of certain cells results in the crippled arm, the crippled leg. Similarly, although not always as outwardly apparent as in the instance of the crippled leg, deficiencies in brain structure or defects of somatic organization result in mental deficiency. Mental retardation is thus a symptom of some constitutional disturbance or defect."[4]

ANALYSIS:

A review of pertinent literature leads one to the unmistakable conclusion that children, variously called mentally retarded, subcultural, "familial," non-organic, aclinical or garden-variety, do not, as a group, upon the most thorough neurological and psychological examinations, exhibit ". . . deficiencies in brain structure or defects of somatic organization." Sarason and Gladwin sum up the neurological consensus by stating that the mentally retarded, who constitute the bulk of those in public school special classes and the majority of "high grade" institutionalized children, presumably do not exhibit any central nervous system pathology.[5] They call attention to the need to differentiate this group, called mentally retarded, from the mentally deficient who have demonstrable central nervous system disorders and who probably will never achieve a normal social and intellectual status.

Therefore, in the absence of any evidence to the contrary and until that time when such evidence is forthcoming, mentally retarded children who exhibit no central nervous system pathology should be assumed free of constitutional disturbances that in some way act to produce inferior intellectual development. It appears to this writer, from the standpoints of educational programming and research, that an uncritical adherence to a traditionally all-inclusive concept of mental retardation, which rules out the possibility that many of these children have intact central nervous systems

4. *Ibid. p. 150.*

5. *Sarason, S. B. and Gladwin, T., "Psychological and Cultural Problems in Mental Subnormality: A Review of Research," Genetic Psychology Monographs. Vol. 57, 1958, p. 17. (Also published in monograph form in the May 1958 issue of the American Journal of Mental Deficiency and in the Basic Books Edition of 1958. In addition, it is included in the 1959 edition of Sarason's Psychological Problems in Mental Deficiency.)*

and have capacities for at least typical development, is a dubious practice for the following reasons:

1. Such a viewpoint is unduly restrictive to the researcher in that its emphasis on the apparent irremediability and constitutionality of this condition detracts from potentially promising investigations into the role of cultural and psychological variables in mental sub-normality.

2. It establishes unwarranted limitations on what might be attempted and accomplished educationally with mentally subnormal individuals to improve their intellectual, social and psychological functioning.

3. It relegates to public school special classes for the mentally subnormal, thousands of children for whom such "educational" placement may not be indicated in the light of our professional understanding and knowledge, or justified on the basis of a "diagnosis" of mental retardation. This "diagnosis" and placement largely determines the future course of the lives of these children.

4. It engenders in the teacher a predeterministic mental set which discourages experimentation and hope in the classroom.

5. A positive position does not assume that, in the absence of *demonstrable* central nervous system disorder, the possibility of organicity is ruled out. Rather, it recognizes that neurological procedures and criteria are not now completely valid or reliable and this positive position is taken in the interests of research and experimentation.

IMPLICATION:

If this large group of children, described above, does not *exhibit* central nervous systems that are different from the typical group, the question to be asked is, "Why are these children mentally subnormal?" It must be determined whether these children are subnormal as a result of functional rather than constitutional causes. It should be noted that the evidence available, albeit scanty, points to the conclusion that a great number of those children, presently classified as mentally retarded, cannot be so classified using Goldstein's definition.

II. FACT OR FICTION?:

"Mental deciency exists from birth or early age . . .",[6] ". . . is incurable and irremediable."[7]

6. *Goldstein, op.cit. p. 151.*
7. *Ibid. p. 150.*

ANALYSIS:

As long ago as 1952, Kirk cautiously generalized that nurture may be an important underestimated factor in the causation of mental subnormality — not all mental retardation exists from birth or an early age.[8] In trying to locate preschool children with I.Q.'s between 45 and 80 for an experimental study, Kirk contacted schools for the names of siblings of known school-age retardates, social agencies, clinics, pediatricians, and public health department officials. His search was relatively unsuccessful. He found a few children ". . . referred by doctors were grossly deficient, with retardation usually of organic nature, but a large percentage of children from all of these sources was found to be of average intelligence . . ."[9] Since it is generally agreed that high-grade mental retardates are frequently found in sub-cultural environments and, as a result of Kirk's lack of success in finding such children at preschool ages, there is a suggestion:

> ". . . that many children later placed in special classes or institutions are not mentally retarded in terms of intelligence test scores at the ages of three, four, or five. Some children, whose older brothers and sisters were in special classes, tested approximately normal at the preschool ages. This raises the question as to whether children from low cultural levels who are approximately normal at an early age may later become mentally retarded because of their cultural environment or other unknown variables."[10]

IMPLICATION:

Kirk's experiments with the early education of the mentally subnormal once again raises the controversy of nature vs. nurture in the development of intelligence. In a recent (1958) publication, describing the results of a five year experiment analyzing the effects of preschool education on 81 young mentally retarded children, Kirk outlines both the nativist and environmentalist points of view.[11] The nativist's position is clear: intelligence is mainly a factor of central nervous system maturation from conception on; children grow evenly at their own rates; early stimulation will not increase potential; mentally subnormal children cannot be made "normal", regardless of any kind of training or education now known; when such changes in intelligence do occur, they are more than likely due to errors of original diagnosis; mental sub-normality is incurable and irremediable.

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8. *Kirk, S. A., "Experiments in the Early Training of the Mentally Retarded, American Journal of Mental Deficiency. 56:692-709,1952.*
9. *Ibid. p. 697.*
10. *Ibid. p. 698.*
11. *Kirk, S. A., Early Education of the Mentally Retarded. 216pp.*

The position of the environmentalists is less clearcut but, from this viewpoint, more promising: within board limitations, the development of children is significantly affected by the kinds of early rearing they have experienced; to explain all changes in intelligence as being due to erroneous original diagnosis is only to beg these intriguing questions. Why are researchers unable to locate preschool educable mentally handicapped children? What are the conditions that promote increments in intelligence among certain children?

A review of Kirk's findings raises the following questions in the mind of the serious student:

1. What is the significance of the acceleration in rates of growth of 30 (in a total sample of 43) children who received preschool education?
2. Why did the study disclose that is was much more difficult to displace the rates of growth of organic children than non-organic children? (However, one may argue that the apparent irreversible defect of the organic child may be due to the educator's inability to adequately compensate for this defect. A dramatic example of the use of compensatory educational techniques can be found in a study of the education of Helen Keller).
3. Why was it generally found that the greater the changes made in the environment, the greater were the changes in the rates of growth?

It is interesting to note that: "familial" educable children do not usually exhibit mental subnormality during the preschool years (The Columbia University Research Project on the Effect of Group Training on Four and Five Year Old Children Who Are Mentally Retarded, has unofficially reported similar findings); "familial" educable adults marry, find jobs, solve problems on a typical level, and maintain themselves independently and indistinguishably in the community;[12] it appears that only when this individual is of school age, is he diagnosed and does he function as mentally subnormal; it appears almost as if the schools predestine the child to mental subnormalcy. Therefore, it would seem logical to designate the nature — nurture issue an open one and to find answers to the following problems:

1. What is the relationship of cultural and psychological variables to early rearing practices and their effects on intellectual growth and development?
2. What are the factors comprising this general ability we call intelligence and how can they be more adequately measured?

12. *Sarason and Gladwin, op.cit. pp. 13-50.*

3. What is the relationship, if any, between test problem-solving behavior and non-test problem-solving behavior? Do different racial, religious, and cultural groups score differently on conventional tests of intelligence because of actual differences in innate intelligence or because of the ways children are brought up to solve problems?

4. What is the relationship between motivation and status goals? Is academic achievement a status goal of all who go to school?

III FACT OR FICTION?:

Mental retardation ". . . results in the inability of the individual to profit from ordinary schooling . . ."[13] and ". . . by providing him with a different educational program suited to his needs, we can make him more capable of facing the world which lies ahead of him."[14]

ANALYSIS:

No one, who has worked with mentally retarded children in school, would question the validity of Goldstein's remarks. However, one may question the implication that there is substantial evidence as to what the proper program should be. From his article, one can conclude that retarded children in special classes are receiving a great deal more purposeful education than retarded children in regular classes.

In a rare moment of candidness, a distinguished special educator recently remarked, during a meeting in which this writer participated, that special education isn't special nor can it, in many instances be considered education. Studies find that, insofar as measurable abilities are concerned, mentally handicapped children in special classes are very similar in development to those in regular grades.[15] In fact, the earlier studies of Bennett and Pertsch found that retarded children in special classes did poorly in physical, personality, and academic areas as compared with retarded children in regular classes. Later studies by Blatt and Cassidy found few significant differences between those children in the regular classes and those in special classes. Notwithstanding the many obvious and valid criticisms of studies

13. *Goldstein, op.cit. p. 151.*

14. *Ibid. p. 165.*

15. *Bennett, A., A Comparative Study of Sub-Normal Children in the Elementary Grades. 81. pp.*

Blatt, B., The Physical, Personality, and Academic Status of Children Who Are Mentally Retarded, Attending Special Classes as Compared with Children Who Are Mentally Retarded Attending Regular Classes. 134. pp. (Also published as an article, American Journal of Mental Deficiency. 62:810-818, 1958).

Cassidy, V. M., and Stanton, J. E., An Investigation of Factors Involved in the Educational Placement of Mentally Retarded Children. 93 pp.

Pertsch, C. F., A Comparative Study of the Progress of Sub-normal Pupils in the Grades and in Special Classes. 101 pp.

comparing special vs. regular class membership, it has yet to be demonstrated that the special class offers a better school experience for retarded children than does regular class placement.[16]

Certainly, there is little evidence to support the belief that special class provisions, even the best available today, are the millennium; nor can we even say that the best of our special classes are "good enough."

IMPLICATION:

Disturbing as it may be to those who have conscientiously developed curricula for the mentally handicapped, and while providing convenient rationalizations for the "do-nothings" who reject responsibility by saying either we do not know enough to plan or each teacher should plan according to the individuals in her class, there is little evidence to support the widespread notion that, by placing mentally retarded children in conventional special classes, society is meeting their educational needs. There is no doubt that this group of children, regardless of etiology or permanence of condition, requires special provisions in school. There is doubt, at least among some educators and psychologists, as to what should constitute the program of special education and who can benefit from it. In this regard, some intriguing questions to be asked are:

1. How many children are placed in special classes after careful differential diagnosis? How many are placed after the simple administration of Binet and WISC Tests? Does the administration of these tests constitute a differential diagnosis?
2. Using more than the limited evaluations to be derived from the I.Q., how many children in special classes do not belong there? Do we have a moral obligation to these children regarding diagnosis, placement, and the ultimate effects of these on their lives?
3. What are the best ways to teach mentally subnormal children to read, to understand numbers, to understand themselves? What is different about the methods, materials and content in special classes commonly found today?
4. What is really meant by the statements:
   a. "She is not a good student but she may make a good teacher."
   b. "This person isn't a skilled teacher but she has a good attitude. She will not do any harm to children."
   c. "We can't measure the differences, but these children in the special class are receiving a finer education than if they were to remain in the regular grades."

16. *Blatt, op.cit. pp. 11-14.*
Cowen, P. A., "Special Class vs. Grade Groups for Sub-Normal Pupils," School and Society. 48s27-28, 1938.

Do these statements indicate that we don't know how to evaluate special education because we, as yet, do not know what special education should be?

The implication here is evident. What is needed is an infusion of bold, creative thinking into the field. Experimentation with new and unorthdox methods and materials must be encouraged. A more discerning study of the mountain of research in education, special education, psychology, anthropology, and sociology must be made in order to separate the valuable from the non-essential. We must reject many of our present curriculum practices because they have been so eminently unsuccessful. When Goldstein describes the retarded as ". . . incapable of logical thought, unable to make generalizations or work with abstractions," and therefore, ". . . response must be habituated. He must be taught specific responses to specific situations.", is he merely perpetuating the retardation with the supposed educational treatment?[17] Is there the possibility that, for some children, the retardation is due to an early rearing emphasizing habituation? Can some retarded children profit from programs involving creative thought processes rather than from the continuation of "straight-jacketed" stereotyped curricula which reflect the same kind of thinking?

IV. FACT OR FICTION?:

"The general consensus at the present time seems to be that 40 to 50% of mental deficiency are of an hereditary nature . . ."[18]

ANALYSIS:

The recent work of Sarason and Gladwin has pointed up the meagerness of the evidence offered by those adherents of hereditarian theories of mental subnormality.[19] Their investigations have convinced them:

> ". . . that an hereditary determinant of mental capacity must not be assumed to exist unless proven. Furthermore, proof should be sought in terms of our present knowledge of human genetics and of the nature of human intellect, rather than, as is commonly done through the administration of routine intelligence tests to a variety of 'racial' and other groups. We do not propose to *deny* that heredity is a factor, particularly in mental deficiency, but rather that we should leave it out of our accounting until it is supported by more than speculation and bias."[20]

17. *Goldstein, op.cit. p. 152.*
18. *Ibid. p. 152.*
19. *Sarason and Gladwin, op.cit. pp. 63-78.*
20. *Ibid. p. 63.*

IMPLICATION:

Every day, recommendations are being made in regard to sterilization, prohibition of marriage, court placement of children, and counselling of adults — all based on the assumption that mental subnormality has a genetic basis. Should such crucial decisions be made without more evidence? What are the genetic factors, if any, in the causation of mental subnormality?

V. FACT OR FICTION?:

"He (the mentally retarded) is more liable to illness and physical defects and generally lacks the physical stamina of the normal child."[21]

ANALYSIS:

Blatt reviewed a great many studies:

> ". . . concerning the physical status of children who are mentally retarded. Although there was disagreement among researchers, the consensus seems to indicate that there is a positive relationship between intelligence and various indices of physique. However, this relationship is not invariable and appears to be too minor to be useful for predictive or educational purposes. This relationship does not appear to be linear in character and it may be more significant in the more severly retarded group."[22]

The mentally retarded are not necessarily "limited in physical prowess."[23] Especially among the group called "familial," there are many who far surpass the norm in every aspect of physical ability. Mentally retarded children do not have to be malnourished. They do not have to be poor athletes. They are weak for the same reasons that typical children are weak; they are strong for the same reasons. Because a significant percentage of these children reside in substandard environments and because a significant percentage have central nervous system impairment, some retarded children are physically limited. The bulk of those in the "higher grade" category are not.

IMPLICATION:

Mentally retarded children do not necessarily have to be physically limited. To assume that these children are so limited because of mental

21. *Goldstein, op.cit. p. 152.*

22. *Blatt, op.cit. pp. 50-51.*

23. *Goldstein, op.cit. p. 155. (Studies of characteristics of the mentally retarded, using this term generically, often become meaningless because of differences in abilities among the various sub-groups considered retarded. Particularly in the area of physical status, it should be emphasized that there are very significant differences between organic and non-organic children and between higher grade and lower grade children).*

inability is to use a handy but poor excuse to remain inactive when rehabilitation may be indicated. We do not explain malnourishment in a gifted child by quoting his high I.Q.; evidence dictates that we do no less for the subnormal. Although, as a group, mentally retarded children both in special and regular classes surpass their academic expectancy as measured against their mental age, it is ironical that special class teachers continue to feel their greatest anxiety in reconciling actual reading and arithmetic achievement of children with what teachers expect and hope for.[24] Fewer teachers have anxious moments rationalizing physical education and health programs for these children regardless of what is being accomplished and what can be accomplished.

VI. FACT OR FICTION?:

"Early studies (circa 1900), purporting to show that as high as 85% of delinquents and criminals in the studies were mentally deficient, have been challenged. Today the figure is believed to be closer to 50%."[25]

ANALYSIS:

In a recent review of the literature, Blatt found numerous studies, with few exceptions written at least 15 years ago, reporting high relationships between delinquency and intelligence.[26] More recent research reports low relationships, "j" shaped in character, and suggest the following factors that influence these relationships and affect their validities:

1. There appears to be a multiplicity of causes of criminality and delinquency. Lower I.Q., per se, does not play an important role in the causation of such behavior unless this factor combines with other causes (as Goldstein points out) such as: poor homes, mental disease, alcoholism, and marital strife among adults and school failures, poor neighborhoods, unrealistic education, and community rejection toward children.

2. Some delinquents receive low I.Q. scores on tests because of their subcultural environment rather than as a result of constitutional defect.

3. There are selective factors operating with respect to the intelligence level of delinquents in institutions. One institution may not admit the subnormal while another may care for this type of child exclusively.

4. Brighter delinquents may escape detection and apprehension.

24. *Blatt, op.cit. pp. 45-50, 98.*
25. *Goldstein, op.cit. p. 154.*
26. *Blatt, op.cit. pp. 39-45.*

5. On the basis of a more promising prognosis, the mentally able delinquent may receive a suspended sentence while the sub-normal child, committing the same act, may be placed in an institution.

In summary, ". . . it appears that the retarded are more frequently representd among delinquent populations than typical groups but this representation may not be as significant as once was believed. It is probable that the relationship between intelligence and delinquency is "j" shaped in character. The group known as 'borderline normal' may comprise the most significant population among delinquents."[27]

IMPLICATION:

Mentally subnormal children do not have to become delinquents; nor can we explain delinquency as a manifestation of the sub-normality. It is not surprising that some of these children become delinquents; it is amazing that more do not. Society must recognize the need for psychiatric and social services, realistic education, and vocational counselling for all its citizens. More importantly, we must cease looking with derision at those in a different cultural milieu.

Conclusions

1. That large group of mentally subnormal children, presently classified as "familial" mentally retarded, should be assumed free of constitutional deficiencies or genetic abberrations that may result in inferior intellectual development.
2. A great many mentally subnormal children, presently classified as mentally retarded, cannot be so classified using the conventional definition that requires constitutional defect.
3. There is impressive evidence that numerous children, presently classified as mentally subnormal, acquire this subnormality sometime after birth or early age.
4. There is impressive evidence that numerous mentally subnormal children and adults, originally classified as mentally retarded, can not be so classified on later evaluations.
5. There is impressive evidence that the role of cultural and psychological variables in the causation of mental subnormality has been greatly underestimated.
6. There is little evidence to support the wide-spread practice of placing educable mentally retarded childrn in *conventional* special classes rather than in the regular grades or in some other, *as yet unknown*, more suitable classes.

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27. *Ibid. p. 811 (of A.J.M.D. Atricle, see footnote 14, reference 2).*

7. There is a dearth of evidence supporting hereditary theories of mental subnormality.

8. As a group, educable mentally retarded children, are not significantly different in physical attributes from typical children.

9. There are low relationships, "j" shaped in character, between delinquency and intelligence.

10. Many present assumptions concerning the mentally subnormal are unsubstantiated, are reinforced with prejudice, and flourish in an atmosphere of rigid and stereotyped thinking.

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Problems Related To The Evaluation Of Intelligence Of Severely Retarded Adults

ivan holowinsky

For a long time, psychologists and educators have been aware of individual differences among mentally defectives of the same I.Q. level. These differences were found not only in the area of personality and physico-psychological factors but also in the levels of alertness and responsiveness to the environment.

Basic to the found differences are problems related to measurement. The question remains; whether these are genuine differences among individuals of the same capacity. Perhaps we are dealing here with individuals who have different capacities but were labeled with the same I.Q. because of the inadequacy of the present intelligence tests when used with severely retarded adults. This inadequacy could be traced to the statistical design of the presently used intelligence tests and to the difficulty of administering a test to a severely retarded individual because of physico-psychological or personality factors.

Although psychological literature dealing with the general problems of mental retardation is very extensive, there has been comparatively very little research done involving severely retarded adults. This seems surprising because historically, the study of mental retardation began with the study of the sererely retarded by Itard (1932) and Sequin (1866). At the present time, only occasionally one can find a study like that by Morris (1957) dealing with the habit training of severely retarded defectives. Little was done in the area related to evaluation of the intelligence of severely retarded adults.

Difficulties Related to Statistical Designs of Intelligence Tests

Basic to the computation of I.Q. is an assumption that intelligence is distributed along the normal probability curve. However, because of various physical causes and accidents in infancy, we have many more severely retarded individuals than percent equivalent below the fourth standard deviation. (The writer uses fourth standard deviation as a reference point in keeping with new A.A.M.D. manual. The reader is referred to Table 11, page 59, of the said manual: "conversion of I.Q. scores according to standard deviation values.") The fact of unequal distribution was presented more than thirty years ago, by Thorndike (1926) in his classic book, "The Measurement of Intelligence."

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"Certain diseases and certain accidents, either before, during or after birth, act to prevent or reduce the development of intellect. In some cases, one of these causes may act to prevent intellect from reaching more than a certain very low status regardless of what might have happened had its action been witheld. The result may be that whatever the distribution apart from these causes, there is combined with it a very small distribution with a mode at a very low degree of intellect."

This suggests that we are dealing with unequal units of measurement at the lower end of distribution.

Furthermore, the low I.Q.'s obtained on an adult intelligence test do not have high validity and most of the present intelligence tests are unsuitable for severly retarded adults. For example, an individual 25 years of age can obtain a verbal I.Q. of 46, performance I.Q. of 42 and full scale I.Q. of 41 by simply obtaining one weighted score on each sub-test of the WAIS. The Leiter Adult Intelligence Test can not be used for low grade retarded adults because norms on this test do not go below 50 I.Q. On the Cornell-Coxe Performance Ability Scale, one can obtain M.A. 4-10 and I.Q. 32 by just passing one single item on each sub-test.

Because the tests intended primarily for adults are not suitable for those who are severely retarded, psychologists are using such tests as Stanford-Binet, Nebraska Test of Learning Aptitude, Merrill-Palmer Scale of Mental Tests, Columbia Mental Maturity, Ammons Full Range Picture Vocabulary Test, and others. The aim is to obtain a mental age, and an I.Q. is then obtained as a function of M.A. and C.A. This procedure is quite inadequate for a few reasons:

1. The mental age does not tell us much if we use it to describe an adult. An adult with mental age of five is different in many respects from an average child five year of age. The difference is extreme in personality and adaptability. Furthermore, two adults can obtain exactly the same I.Q. and mental age, although the one can be 20 years of age and the other 35. In spite of the same I.Q. and M.A., they are obviously different in many respects.
2. The tests which were not standardized on adult population, may have items of very little interest value for an adult. In addition, some of the items intended for a child who leads a normal life within the structure of family and society have very little meaning for an individual who spent his life in an institution.

Difficulties in Measurement Due to Physico-Psychological or Personality Factors

Apart from difficulties inherent in the lack of proper measures, the difficulty exists also in establishing rapport and obtaining a valid evaluation

because of physical limitations or emotional factors. Often it is very difficult, if not impossible, to tell what is of primary importance.

It is common knowledge that severe retardation is usually associated with some organic damage. Often damage is severe and obvious enough for even an inexperienced examiner to observe. In some cases, the damage can not be detected, even by such means as the EEG or skull x-ray.

To the group with severe organic damage belong such retarded individuals who in addition may possess a number of sensory problems or poor visual-motor coordination. Evaluation of their intelligence is complicated by the fact that traditionally, intelligence was estimated by the degree of motor development and with severely damaged even a very experienced examiner will have difficulty in making a diagnosis because intelligence can be evaluated only in terms of its expression. In addition, the battery of tests to be used with severely retarded is rather limited. The examiner does not have a choice and uses tests having predominance of performance items such as Merrill-Palmer, Nebraska, Cornell-Coxe and others.

The advantage of Merrill-Palmer is in the fact that the examiner can omit some items that the subject would be obviously unable to pass because of his physical limitations. In this manner, a patient's handicap will not have much affect upon his intelligence score. However, the problem is that in this case, much depends upon the experience and judgment of the examiner.

The Nebraska Test of Learning Aptitude, while being an excellent tool for those who have hearing problems or speech defects, tends to lower I.Q.'s of the severely retarded adults who are defficient in motor coordination.

A very common error of examiners is to assume that degree of retardation is directly related to physical damage. That this is not always a case has been suggested by many studies. There are cases of individuals with severe central nervous system damage who achieve at the average level.

In addition to physical handicaps, problems of personality and motivation exist. It is a safe assumption that an adult who has spent many years in an institution and has had several psychological evaluations will not be highly motivated toward another examination, and most of them appear to resign themselves to the present condition.

Often severely retarded, withdrawn, submissive individuals are mistaken for those having a severe personality problem. Occasionally, the symptoms are such that diagnosis becomes very difficult if there are no records on the early developmental history. It is a safe assumption that if the early development was slow, we are dealing here primarily with mental retardation. On the other hand, there are severely retarded adults who are

also mentally ill. Therefore, what did seem like a mental retardation was probably a severe personality problem con-committant with retardation. The findings of numerous recent studies point to the relationship between psychosis and abnormal metabolism suggesting that severe retardation does not exclude the possibility of psychosis. Some believe (Mautner 1959) for example, that diagnosis of psychosis will eventually depend upon laboratory findings rather than interpretation of behavior by a psychiatrist or psychologist.

Awareness of the problems under discussion is related to the improvement in evaluation and classification which has a great importance for mentally retarded. They can be given tasks commensurate with their ability which in turn will give them feelings of satisfaction and achievement. Experience at the Training School shows that some of the severely retarded can perform a number of tasks satisfactorily. In his study, Delp (1957) reported two interesting cases. In one a man of 31 I.Q. did hand lawn mowing with practically no supervision other than being told which area to care for. This included lawns around family homes and flower gardens as well as broader grass areas. He was slow moving and very talkative but work was done as well as that done by most people hired in a community for this type of job. Perhaps a more interesting case was that of a man of 26 I.Q. who worked in the laundry. He pulled washers, with help, and delivered laundry to cottages. It might be of interest that another man of 60 I.Q. never was able to learn to operate the washers or to do any laundry job well. These two cases show further low validity of I.Q. in predicting adaptive behavior of the severely retarded individuals.

This short, by no means complete, review of problems suggests that evaluation of intelligence of severely retarded adults is an area open for investigation. There are several possible methods one may use in order to improve the evaluation.

1. Observe what the retarded individual actually does and incorporate this into the test score. If one cannot pass the button item on the Merril-Palmer Scale but is known in the cottage or school, to be able to button his own coat, it would seem appropriate to give him credit for this item on the test.

2. Occasionally, it might be necessary to extend administration of the same intelligence test over a number of sessions. Generally, this is not the accepted procedure with mildly retarded or higher subjects because they may be able to anticipate the kinds of questions that will be asked. However, there is no danger of this while testing severely retarded. In addition, we eliminate distractability and probably will get optimum attention from the subject during short time intervals.

3. The order in which the items are administered is not of primary importance. The examiner could begin with those items that have high attention value for the individual being tested.

4. It was the writer's experience that severely retarded subjects respond well to large form boards (Seguin Form Board, Witmer Form Board, etc.) They might be used to initiate testing.

In conclusion, I would like to remark that these and many other possible methods are worthy of experimental evaluation.

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